EXECUTIVE SUMMARY

Department of Ecology's Toxic Reduction Engineer Efficiency (TREE) team worked with Welch's Foods (Welch's) to find ways to reduce their water usage, reduce their wastewater discharge and improve wastewater treatment. Welch's is a fruit juice processor with two plants in Grandview, Washington. Several site visits were made to the Welch's facility by members of the TREE team to observe the current process activities and to identify potential water and waste reduction opportunities. The team focused primarily on ways to reduce the use of water by reusing Welch's evaporator water and reducing the amount of seal water used in several pumps at Plants 1 and 2, and optimizing the apple washing step in Plant 2. This report presents the TREE team's evaluation of Welch's best opportunities for water reuse.

The water reduction opportunities discussed in this report are divided into two sections, quantifiable and non-quantifiable opportunities. The quantifiable opportunities are listed in Table 1 below. The opportunities were analyzed for a process in a specific plant but can be applied to similar processes in both plants. Welch's Foods currently uses an average of approximately 15 million gallons of water per month[1]. For Welch's, implementing the TREE team's suggestions can result in a 42 million gallons per year reduction of water use and a $137,000 per year savings in associated costs.

Table 1 – Quantitative Water Reduction Opportunity Summary

Opportunity		Water Savings (gallons/year)	Cost Savings ($/year) [2,3]	Pay Back (months)
1.	Reuse of evaporator water - Plant 1			
	A – Boiler make-up	1.82 million	$14,200/year	3 months
	B – Wash water	24.9 million	$70,200/year	14 months
2.	Recycle seal water for compressors - Plant 1	14.4 million	$40,600/year	7 months
3.	Optimizing the apple washer - Plant 2	1 million	$2,800/year	5 months
4.	Wastewater treatment, install hydrosieve[4] – Plant 2	-	$9,000/year	12 months

In addition to the opportunities outlined in the table, the TREE team identified opportunities that were not quantified.

[1] Grandview Plant 1 – 313,000 gpd and Plant 2 – 181,000 gpd values from wastewater application form.

[2] Water supply and discharge rates based on year 2002 rates, City of Grandview. Gas rates based on average rates from September 2000 to April 2001.

[3] Additional cost savings can be realized equivalent to an additional 3.852% due to taxes on the water use and discharge costs.

[4] Assuming a BOD reduction of 15%. See Wastewater Treatment Opportunity.